

Progress Report Quarters 1 – 3, Montana Research Initiative: One Medicine

1. Hires Quarter 1:

Research Technicians: 4.0 FTE
Postdoctoral Scholars: 2.5 FTE
Research Scientists: 1.0 FTE
Undergraduate Students: 3
Graduate Students: 2

Hires Quarter 2:

Graduate Students: 2 (partial support from MT funding)
Postdoctoral scholar from quarter 1 left due to personal reasons, replaced with a newly hired research technician: 1.0 FTE (partial support from MT funding)
Postdoctoral scholar: 1.0 FTE (partial support from MT funding)
Summer Research Assistant
Undergraduate hired to replace one from Quarter 1 (student is moving)
Research Associate: 1.0 FTE (partial support from MT funding)
Research Assistant III – Hourly

Hires Quarter 3:

Research Technicians: 2 employees at 0.5 FTE
Research Assistant II: Hourly
Graduate Students: 1
Undergraduate Students: 1

2. Equipment Purchased:

None

3. Progress Towards Milestones:

Grants Awarded:

- NIH R21AI119772. Title: Development of a novel, safe and efficacious *Coxiella burnetii* vaccine. Total costs: \$396,000. PI: Agnieszka Rynda-Apple, Co-PI: Mark Jutila
- NIH R21 AI117441. Title: Role of type I IFN and human TLR4 in *Coxiella burnetii* pathogenesis. Total costs: \$396,000. PI: Mark Jutila.
- \$50,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. This pilot project funding provides supplemental support for Dr. Jodi Hedges collaboration with Mark Jutila's Project of the One Medicine Grant.
- \$30,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. This pilot project funding provides supplemental support for Agnieszka Rynda-Apple's collaboration with Mark Jutila's Project of the One Medicine Grant.
- Plowright PI: Wildlife disease risk analyses. US Geological Survey (USGS)
\$59,991 Total Award Period Cover

- \$30,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. Supplemental support for Benfang Lei's Project of the One Medicine Grant.
- \$50,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. This pilot project funding provides supplemental support for Raina Plowright's Project of the One Medicine Grant.
- \$50,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. This pilot project funding provides supplemental support for Matt Taylor's Project of the One Medicine Grant.
- \$50,000 was awarded in September by the NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. This pilot project funding provides supplemental support for Diane Bimczok's Project of the One Medicine Grant.

Quarter 2 Grants Awarded:

- **NIH-NIAID- 1R21AI123293-01**; "*Caenorhabditis elegans* infection model for *Coxiella burnetii*" (Minnick, PI), 2/15/16-1/31/18. **\$398,750**

Quarter 3 Grants Awarded:

- **NIH- 7R01DK099452-03 "Inflammation-dependent methylation in the mucosa"** (Kominsky, PI) **\$250,000** 07/1/2016 – 6/30/2017

Total Funding Received: \$1,760,741

Grants Submitted Quarter 1 – Quarter 3 (Quarter 3 highlighted in blue, grants listed are still pending):

- Voyich PI: NIH R01 Role of the Staphylococcus aureus SaeR/S Regulatory System in Neutrophil Evasion \$1,821,360.
- Voyich Co-PI: NIH E01 Regulation of Streptococcus pyogenes virulence by ADP-ribosyltransferase SpyA \$180,000.
- Weidenheft PI: Burroughs Wellcome Fund - Investigators in the Pathogenesis of Infectious Disease (\$500,000)
 - National Institutes of Health – NRSA postdoctoral fellowship
 - Cancer Research Institute – postdoctoral fellowship
 - National Science Foundation- postdoctoral fellowship
- Plowright: NSF (coupled Human Natural Systems; \$1,750,000)
- Plowright: Transmission or within-host dynamics driving pulses of zoonotic viruses in reservoir-host populations Searle Scholars Program (\$300,000)
- June PI: NIH R21 Non-invasive quantification of cartilage health using a novel bioluminescent reporter mouse \$396,000.
- Miles PI American Heart Association (\$154,000)

Controlling Inflammation and Atherogenesis through Exercise and the Gut Microbiome

- Quinn PI: R21 submitted to the NIH in February, Novel JNK Inhibitors for Treatment of Rheumatoid Arthritis, \$396,000
- Quinn PI: Investigator Initiated Research grant submitted to Pfizer in March, Development of Novel JNK Inhibitors for Treatment of Rheumatoid Arthritis, \$150,000
- Voyich PI: R21 February 5, 2016, The SaeR/S Regulatory System of *Staphylococcus aureus* Prevents Complement-mediated Interactions with Human B cells \$396,000.
- Taylor PI: \$50,000 NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. Inflammatory responses during alphaherpes infection
- Voyich PI: \$50,000 NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. The SaeR/S Regulatory System of *Staphylococcus aureus* Prevents Complement-mediated Interactions with Human B cells
- Bimczok PI: \$50,000 NIAID/NIH Center of Biomedical Research Excellence for Zoonotic Infection. Transmission of *Helicobacter suis*
- Quinn PI \$248,703 NIAID/NIH Center for Zoonotic and Emerging Infectious Diseases Supplement : Optimize germ-free and gnotobiotic mouse facilities.

Working with Industry:

- Importantly, the three main PIs of the One Medicine proposal (Voyich, Jutila, and Quinn) are working with Totem Biosciences to generate data and projects appropriate for SBIR and STTR grants. We anticipating submitting these types of grant proposals within the next two quarters of funding.
- PI Quinn established a collaboration with a small Montana pharmaceutical company, SAJE Pharma, LLC from Kalispell, MT. SAJE has been developing novel inhibitors of S-nitrosoglutathione reductase (GSNOR) as anti-inflammatory treatments. Dr. Quinn will be testing these compounds in models of rheumatoid arthritis.

Quarter 2 Update:

- PIs Voyich, Jutila, Quinn, and Minnick, are working with Totem Biosciences

Quarter 3 Update:

- PI Quinn began experiments in collaboration with SAJE Pharmaceuticals
- Experiments being outlined with Totem Biosciences

Expanding Research Capabilities

- Provided funding for establishing a new research program on the role of the intestinal epithelium in infectious disease in Fall, 2015.

Update for quarter 2: New PI is in the process of hiring.

Update for quarter 3: New PI hired 1.0 FTE and 1 Graduate Student

Disseminating Knowledge Gained from the State Funded Initiative:

- Several papers are in progress that will credit the Montana State Research Initiative for funding.

Update Quarter 2:

- Four papers in revision crediting State Funding

Update Quarter 3:

- Four papers published or in press citing State Funding Initiative
- Two papers published with work directly related to state proposal

4. Total expenditures in first - third quarters of funding: \$409,365.47